A Sustainable Environment: Our Obligation to Protect God's Gift

by

George P. Nassos

Why The U.S. Should Be Tilting To Wind Turbines

Energy is one of the most critical issues currently discussed by the media and by people at work, at home and at social gatherings. In particular, the focus is on the fuel required to produce the energy and the fact that its supply is finite and decreasing rapidly. Although no one knows for certain as to the current inventory of fossil fuel in the ground, it is certain that it will run out, perhaps sooner than we think.

At the same time, the demand for this fuel is increasing rapidly and this rate is dependent on the population growth as well as to technology growth. The world population is growing at a rate of ten million people every six weeks. In addition, countries like China and India are providing more electricity for their people and improving transportation options with more buses, trains and cars. As the supply of fossil fuels decrease and demand increases, the price of fuel will certainly increase. Wouldn't it be nice if we had a fuel that was unlimited in supply and, at the same time, it was free? Well, we already have it. It is called wind energy.

Wind mills and wind turbines have been around for a long time, primarily in Europe where countries like Denmark, Germany and Spain depend on them for a large portion of their electrical requirements. Here in the U.S., wind energy is most prevalent in California and Texas, which account for 45% of all the wind power in the country. The next two largest wind power-producing states are Iowa and Minnesota, which account for 9% and 8%, respectively. Energy derived from wind turbines is competitive in cost with new coal- or gas-fired power plants. While the current growth of new wind power installations is a substantial 35% per year, we still have a long way to go. This growth of new projects could be even greater if there wasn't so much opposition to wind turbines. The unfortunate aspect of this opposition is that it is usually emotional.

One of the largest wind projects is being proposed off the coast of Cape Cod in Nantucket Sound. This would be the largest offshore project in the U.S. consisting of 130 wind turbines with the potential of 420 megawatts, or about 75% of the electrical needs of the cape and the islands. The majority of the residents are opposed to this project but the reasons are primarily emotional. The single biggest reason is probably that the wind turbines can be seen from shore and are "unsightly", although it is unlikely that more than five percent of the Cape Cod residents can see the wind turbines from their homes. Just imagine how much less fossil fuel would be used if the wind farm provided energy to the cape, and how much less pollution would be emitted with a corresponding decrease in global warming.

Another group of people opposed to wind turbines are the bird conservationists, and they oppose wind farm projects throughout the nation, particularly in migratory paths. The majority of these people do not want to see one avian species killed by the wind turbines, whether it is by

the turning rotor blades or the lattice structure holding up the turbine. Fortunately, there is a small percentage of the bird conservationists that are more pragmatic and realize that we must find alternatives to fossil fuels and that wind energy is one of the most promising alternatives. This small group has the attitude that bird mortality should be kept to a minimum, but necessarily zero. The most recent data on bird mortality show that about 40,000 birds are killed per year for an average of 2.6 birds per wind turbine per year. This compares to as many as 50 million birds per year killed by communication towers throughout the country. A comparable number of birds are probably killed flying into high-rise buildings. I don't think anyone is suggesting we don't build communication towers (how would we survive without our mobile phones) or tall buildings.

A French company, CITA, seems to have an answer for the energy crunch as well as satisfying the bird conservationists. Its U.S. subsidiary, TurbodynamX, has introduced a small wind turbine with a unique design. Around the outer edge of the three rotors is a fairing, or a ring, that enhances the speed of the wind traveling past the rotors. For a given size wind turbine, this unit can generate 45% more electricity than current technology. It also has a lower start-up speed and it will continue to operate at higher wind speeds than the common wind turbines.

This wind turbine also has the major advantage of being able to attach a net or screen to the fairing, which will protect the birds from flying into the rotor blades. I would think that bird conservationists would embrace this technology as it provides renewable energy while having little impact on avian mortality.

While large wind farms can replace electric power plants and provide electricity with "free" fuel, they possess some of the same disadvantages as the power plants. The wind farms are usually located in areas of low land value and low population density. Consequently, the power must be transmitted to the more densely populated areas where the electricity is needed. Transmission of power over large distances is inefficient and results in power losses. It would be nice to site the power generators close to the consumers, but it has not been possible.

Once again, the TurbodynamX wind turbine may be the answer because it was designed for private use and not for wind farms. This unit can be as small as 500 watts or as large as 300 kilowatts. These small units can be located at the consumers' property, either on land or on a roof. The consumer can use all the power, and if it is insufficient, can still use power from the local utility. If the wind turbine provides more electricity than is required, the excess can be sold back to the utility.

There is no question that we need more renewable energy alternatives, and wind turbines may be the most attractive since they are low cost, generate no emissions and are operated with free fuel. America should move quickly in developing more wind farms to provide us a fossil-fuel-free alternative.